

ANALYSIS OF PERFORMANCE OF FARM FORESTRY AND ITS ROLE IN HOUSEHOLD INCOME IN DISTRICT FAISALABAD, PAKISTAN

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Institute of Agricultural Extension and Rural Development, University of Agriculture Faisalabad, Pakistan. Forests are very significant in terms of the existence of living things on the earth. Forests cover a small area (5.3% of total land area) in Pakistan and they are under severe pressure of deforestation. They are also undergoing land-use change, grazing, browsing, erosion, and so forth that is all because of increasing human and cattle populations. Most of the forests are located in the northern part and this part is also under worst deforestation. The annual wood drain is 3 times greater than the replenishment which much more than expected. Farm forestry is being promoted all over the world as a part of sustainable agricultural system. In order to gain dual benefits, deliberate integrated cultivation of crops and trees is very important. By adopting the system of farm forestry, the shortfall of forest resources in Pakistan can be overcome especially in the provinces of Sindh and the Punjab. The present study has been carried out to determine the scope of farm forestry as a collateral source of socio-economic benefits to the farmers of Tehsil Faisalabad. Farmer's perceptions regarding farm forestry and its impact on their socio-economic conditions are the major factors under discussion in this study. Further, the study identified the constraints of agro-forestry and compiled the suggestions of farmers for its promotion. Out of the whole, five union councils were selected on the basis of simple random sampling technique and two villages were selected from each union council randomly. Then 12 farmers were selected from each village purposively as respondents amongst the farmers practicing farm forestry. Hence total number of respondents was 120. Pre-tested interview schedule was used for interview of the respondents. Statistical Package for Social Sciences (SPSS) was used to analyze the data. It was found that the share of farm trees in the annual income of the respondents was very low. Currently, the population of sheesham (*Dalbergia sissoo*) tree was highest while sumbal (*Salmalia malabarica*) and sufeda (*Eucalyptus camaldulensis*) was highly preferred for future plantation. Sufeda, sheesham, and bakain (*Melia azedarach*) were preferred due to their fast growth rate and fuel and timber qualities. The main limitation of farm forestry were water scarcity, lack of capital and lack of information. It was suggested that in order to promote farm forestry, irrigation water and information about plantation, pruning, and felling techniques should be provided.

Keywords: Farm Forestry, Public Forest Department and Poverty Alleviation.

INTRODUCTION

In order to get multiple benefits from the same land, a traditional method of combining trees with agricultural crops or pasture in farm forestry was used. Kalinganire *et al.* (2008) defined "Farm forestry as a deliberate integration of woody components with agricultural and pastoral operation on the same piece of land either in a spatial or temporal sequence in such a way that both ecological and economical interaction occurs between them." On the contrary, NSW (2003) defined farm forestry as a system of incorporation of commercial tree growing and management by farmers into farming system for the production of both wood and non-wood products, encouraging sustainable natural resource management and increasing agricultural productivity. Trees on farmland improve the microclimate and it is not uncommon to feel the cooling effect of the trees on a hot summer day. Trees thus protect us, our animals and houses from blazing sun in summer and cold winds in winter (Simons and Leakey, 2004).

Visit of the Punjab province will reveal many trees on private farms as boundary markers, shade trees and windbreakers. It will be clearly visible that many more could be accommodated in between. Despite the unscientific and unplanned planting on farmlands, the private farmland plantations are currently contributing four times as much of the timber and nine times as much of the fuel wood that are being produced by state forests (Sheikh *et al.*, 2000). Faisalabad forest division was established in 1947 when Pakistan came into existence. Revenue of two districts namely Faisalabad and T.T. Singh is included in its jurisdiction. It consists upon compact plantation, road side, canal side and rail side plantation. The area wise distribution of the plantation includes 12643 acres of compact plantation, 2919.6 km of canal side, 447.70 km of road side plantation and 325 km of rail side plantation. Faisalabad forest division consist of four sub divisions namely, Faisalabad, TT Singh, Kamaliya, Jarawala and two forests ranges namely Gojra and Sumandry. Total area of Faisalabad district is 14,43,703

acres, whereas forest area is 3890 acres, out of which 2290 acres are under the control of district government and the remaining area is managed by Faisalabad forest division (Tariq, 2010).

Forests are vanishing at an alarming rate. Urbanization, increasing population, extensive use of forest wood for burning purpose, furniture, over grazing, use of wood for fuel, non-rigid policies by government and involvement of government officials in selling timber and dependence of rural population on wood are the major causes of deterioration. GDP of a country develops with the increase in the forests. They are the only source of wood. Wind erosion can be stopped by forests and they can also prevent flood intensity along the banks of rivers and canals. The fossil fuels consumption is increasing rapidly which ultimately polluted the air. Forests intake the Carbon Dioxide and release Oxygen.

There is rapid and alarming deterioration of forests and natural resources due to these causes. The forest department cannot effectively manage the forests without the involvement and participation of local people or community. Forests favor the community in sense of water quality, air pollution, recreation, and aesthetics. Forests are also important source of poverty alleviation and livelihood security in the rural areas.

Montanbault and Alavalapati (2005) observed that focus on biophysical aspects inspired research in farm forestry in academia and government and non-governmental agencies. In order to assess economic feasibility of farm forestry systems, factors influencing the adoption of farm forestry, monitor the relevance and effectiveness of investigations, and guide future research, this science requires in-depth social and economic analyses. Singh *et al.* (2006) reported the constraints involved in adoption of farm forestry were mainly poor infrastructure particularly market services, old/traditional way of agriculture practices and poverty stricken farmers.

Nair (2007) stated that age-old practice of growing crops and trees together was unnoticed in the single-commodity pattern of agriculture and forestry development. There are many opportunities in farm forestry for alleviating poverty and stunning land degradation, and providing ecosystem services in both low-income and developed nations. For improving the food these plants can widely be used because they had no environmental hazards. During limitations of resources and inputs these farm forestry practices can be used.

There is research gap regarding the analysis of role of Public forest Department in promoting farm forestry and reducing rural poverty. This research project is designed to address this gap. The objectives of the study were as to identify and analyze the role of farm trees in household income and subsistence, to identify constraints or problems faced by farmers in plantation of trees on their farms, to analyze the

farmer's perception about services provided by advisors of public forest department.

MATERIALS METHODS

The major purpose of this study was to find the present and future prospects of farm forestry in Tehsil Faisalabad. All the farmers who were raising crops and trees in Tehsil served as the universe of the study. The rural union councils of Tehsil Faisalabad were taken for this research project because the study was related to farm forestry. Five rural union councils were selected randomly from Tehsil Faisalabad. Ten villages were selected randomly from five randomly selected union councils. Two from each union council and from each village twelve farmers were selected randomly who grow trees on their farms, thereby making a sample of 120 respondents according to Fitzgibbon (1987). Keeping in view the objectives of study as well-structured interview schedule was developed to collect the data, which was pre-tested and necessary changes were made accordingly. The respondents were interviewed by the researcher personally at their homes and farms. The interview schedule was prepared in English however questions were asked in local language of the respondents for ensuring proper communication in order to get required information with maximum possible accuracy. Descriptive statistics such as frequencies, percentage, means, standard deviation and ranking were used for interpretation of data. Their weighted scores were calculated by multiplying the score value allotted to each category of the scale with frequency count in order to know the relative ranking of various factors. Means were calculated as sum of values derived by number of observations. Factors were ranked taking their mean value in to consideration. The reliability of the instrument will be measured through test-retest method (Nachmias and Nachmias, 1992) to obtain the same results through usage of same methods within the same sample (Cohen *et al.*, 2008).

The collected data were statistically analyzed with the help of Statistical Package for Social Sciences (SPSS) and interpreted to draw conclusions and to make recommendation.

RESULTS AND DISCUSSION

The general objective of the present study was to determine the role of farm forestry in alleviating poverty in tehsil Faisalabad. Analysis and interpretation of data are the most important steps in scientific research. In this section the results are drawn, discussed and conclusion based on these results is presented.

Till the year 2000, there has been an increasing trend in the planting of different trees species but it has gone down a little due to marketing difficulties and cessation of activities by the Forest Department. There are many hindrances in the free movement of wood from different parts of the country due to restrictions imposed by the Provincial Forest Departments.

Also, farmers do not know the size and specifications in which they should convert their farm-grown wood for ready marketing. There is a persistent campaign of vilification against agro forestry launched by the Agriculture Department and the maximum numbers of farm plantations (65%) were raised during the period of 1995 - 2000 when the World Bank aided program was in force transferring technology and monetary incentives broad categories of land tenures (Sheikh, 1990).

Table 1: Trees and income from trees

Name of tree	Yes %	No %	Quantity (mean)	Income Rs. (mean)
<i>Dalbergia sissoo</i> (Sheesham)	71.7	28.3	24.06	85660.00
<i>Vachellia nilotica</i> (Keekar)	54.2	45.8	9.93	15889.17
<i>Eucalyptus camaldulensis</i> (Sufaida)	51.7	48.3	11.33	28635.00
<i>Salmalia malabarica</i> (Sambal)	65.2	34.8	16.34	38200.00
Shreen	12.5	87.5	2.63	5691.00
<i>Azadirachta indica</i> (Neem)	11.7	88.3	0.70	1068.33
Date palm	4.2	95.8	0.13	1367.45
<i>Melia azedarach</i> (Bakain)	7.5	92.5	0.43	1123.67
Mango	15.5	84.5	2.58	4371.67
Others	8.3	91.7	2.23	4500.00

Table shows that about majority of respondents had planted sheesham tree with income mean of Rs. 85660 followed by about half of respondents growing keekar (54.2%) and sufaida (51.7%), and many of them were growing sambals with income mean of Rs. 15889, 28635 and 38200, respectively. While other plants with low percentage were shreen, neem, khaggal, date palm, popular, bakain, bohr, and mango. Farmers were asked to rank the constraint from 1 to 5 as the extent of prevalence of that constraint and rank average is the mean of ranks given to a single constraint.

Accordingly, the lack of land is identified as being a major obstacle for farm forestry (Roder, Koeboualapha and Manivanh 1995). However, examples exist where increasing land scarcity caused farmers to replace agriculture with tree cultivation and to change the farm objective from food production to the generation of cash with which food could be bought (Saxena 1995). The data of the survey conducted from the random farmers in the villages is presented in the table. The farmers responded differently to all the problems regarding farm forestry. Poor extension services and the salinity were described as major factor to which farmers did not respond. Non irrigated land was rated as the problem at rank second by the most of the farmers followed by the problem of unavailability of land. Analysis resulted from the

survey describes that farmers ranked the unavailability of land as 1st in their intensities of problems faced by them in practicing farm forestry. From the other problems asked to the farmer's considerable number of farmers ranked inadequate services and the unavailability of water as third in their problems list. When the survey extended to the other farmers about the intensities of the problem faced to them, the considerable numbers of farmers ranked the unavailability of fertilizer as 4th major problem to their practicing of farm forestry. The analysis of the result showed that the maximum number of farmers stated the old method of production as the fifth major problem in their list of problems to the farm forestry practices.

Table 2: Constraints in plantation of trees

Problems	Rank (Avg.)
Unavailability of land	9.500
Non irrigated land	8.334
Saline land	6.500
Water logged land	2.600
Infertile land	2.500
Unavailability of water	8.498
Low income	3.400
Less no. of acres	3.834
Unavailability of machinery	3.334
Unavailability of fertilizers	4.000
Transportation problems	4.000
Salinity	0.498
Slow growth of products	1.164
Low per hectare yield	0.666
Old methods of production	4.832
Inadequate services	3.334
Underutilization of land	0.832
Diseases	2.332
Lack of credit	3.834
Instability in market prices	4.834
Shortage of finance	1.000
Unavailability of nursery	3.168
High cost of nursery	1.830
Unavailability of high yielding varieties	0.664
Poor extension services	0.500
High cost of machinery	1.002

The data resulting from the survey conducted to assess the services provided by the farm forestry department to the farmers is presented in the table. The farmers responded differently to the different services provided to them. The overall results showed that most of the percentages of the farmers are totally deprived of the services from the department farm forestry. The other responses of farmers about the status of the services are presented in the table. When asked about the services 12.50 percent of the farmers described the distribution of information literature as the routine activity of the department farm forestry and they stated as this service as "always". The other figures about the

Table 3: Services provided by forest department

Services	Always		Sometime		Never	
	Frequency	%age	Frequency	%age	Frequency	%age
Distribution of seeds	15	12.50	7	5.83	98	81.67
Distribution of sapling	14	11.67	5	4.17	101	84.17
Technical advise	14	11.67	5	4.17	101	84.17
Training meetings	14	11.67	5	4.17	101	84.17
Farm visits	16	13.33	9	7.50	95	79.17
Symposium	14	11.67	8	6.67	98	81.67
Informative literature	17	14.10	9	7.50	97	80.30
Educational program	15	12.02	6	5.83	99	82.14

provision of services to the farmers describe 7.5 percent of the farmers stated the “farm visits” and the “informative literature” services as the occasional activity of the department and they stated it as “sometime”. When asked about the services to the farmers in the survey most of the farmers responded it as the “never” and from these results maximum 84.17 percent of the farmers declared “distribution of sapling, technical advice and training meeting “as the activity “never” performed by the farm forestry department in the Faisalabad region.

Conclusion: Sheesham, keekar, sufaida and sumbals are the trees which are mostly grown by farmers and playing a role in poverty alleviation by providing fuel, food and woods. Analysis resulted from the survey describes that the unavailability of land as 1st in their intensities of problems faced by them in practicing farm forestry. Most of the farmers were not able to get extension services. When asked about the services to the farmers in the survey most of the farmers responded it as the “never” and from these “distribution of sapling, technical advice and training meeting performed by the forest department in the Faisalabad region. Government should facilitate the farmer with water for irrigation. Government should give any solution or treatment for saline soils. Nurseries should be provided so that farmers can easily access them. Farmers should be taught about the identification of different varieties of tree species. Information should be provided that which tree species is most suitable to a specific land. Nursery and seeds of new varieties of trees having good traits and best suited for farm forestry should be introduced. Government should fix a reward for growing a specific number of trees per acre. Make farmers aware that how beneficial trees are to the environment as well as their material benefits through different media.

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